



## Transportation Engineer (Electrical)

Agency Code: 4499 - Exam Code: 0TR42 - Class Code: 3609

Department(s):	Department of Transportation
Opening Date:	9/21/2009 12:50:00 PM
Final File Date:	Continuous
Type of Examination:	Departmental Open
Salary:	MONTHLY-RANGED-SALARY - \$4,608.00 to \$8,379.00
Tenure/Time-base:	Permanent Full-time Permanent Part-time Permanent Intermittent Limited Term Full-time Limited Term Part-Time Limited Term Intermittent
Exam Type:	State-wide

### EEO

An equal opportunity employer to all regardless of race, color, creed, national origin, ancestry, sex, marital status, disability, religious or political affiliation, age or sexual orientation.

### DRUG-FREE STATEMENT

It is an objective of the state of California to achieve a drug-free state work place. Any applicant for state employment will be expected to behave in accordance with this objective because the use of illegal drugs is inconsistent with the law of the state, the rules governing civil service and the special trust placed in public servants.

### WHO SHOULD APPLY?

Applicants who meet the Minimum Qualifications as stated on this bulletin may apply for and take this Training and Experience Questionnaire at any time.

Once you have taken the Training and Experience Questionnaire, you may not retake it for 6 months.

### FILING INSTRUCTIONS

**Final Filing Date:** Continuous

**Where to Apply:** Click on the link at the bottom of this bulletin.

## **SPECIAL TESTING ARRANGEMENTS**

If you have a disability and need special assistance or special testing arrangements, contact the State Personnel Board, Examinations Unit at (866) 844-8671, TTY (916) 654-6336, or via the California Relay Service for the Deaf or Hard of Hearing at (800) 735-2929 from TTY Phones, or at (800) 735-2922 from voice phones.

## **ELIGIBLE LIST INFORMATION**

An open merged eligible list will be established for the California Department of Transportation. The names of successful competitors will be merged onto the eligible list in order of final score regardless of test date. Eligibility expires twelve (12) months after it is established. Competitors must then test again to reestablish eligibility. Competitors may also retest after six (6) months of the date that established their list eligibility.

## **REQUIREMENTS FOR ADMITTANCE TO THE EXAMINATION**

It is your responsibility to make sure you meet the education and/or experience requirements stated below.

Graduates in electrical, electronic, or computer engineering from a non-ABET accredited college or university will be required to pass a written test prior to taking the examination.

If you have any questions concerning how to take the written test, please contact Department of Transportation at 916-227-7858.

## **MINIMUM QUALIFICATIONS**

### **EITHER I**

Graduation from a four-year curriculum in electrical, electronic or computer engineering accredited by the Accreditation Board for Engineering Technology (ABET). (Registration as a Senior in such a curriculum will admit an application to the competition, but he/she must produce evidence of graduation before he/she will be considered eligible for appointment.) (Possession of a valid certificate as an Engineer-in-Training issued by the California State Board of Registration for Professional Engineers and Land Surveyors, or issued by another jurisdiction and accepted by the California Board in lieu of the first division of the examination as an electrical engineer may be substituted for the required education.)

### **OR II**

Possession of equivalent qualifications may be demonstrated by graduation from an engineering curriculum which includes the basic electrical, electronic and computer engineering courses normally covered in a standard four-year engineering curriculum, and by qualifying in a written examination covering basic electrical and electronic engineering. (Registration as a Senior in such a curriculum will admit an applicant to the qualifying examination, but he/she must produce evidence of graduation before he/she will be considered eligible for appointment.)

### **OR III**

A master's or doctorate degree in an electrical, electronic or computer engineering curriculum from a college or university that has a baccalaureate degree program in an electrical, electronic or computer engineering curriculum which is accredited by Accreditation Board of Engineering Technology (ABET). (Registration as a

candidate in such a curriculum will admit an applicant to the competition but he/she must produce evidence of graduation before he/she will be considered eligible for appointment.)

## **POSITION DESCRIPTION**

A Transportation Engineer (Electrical) performs, or assists in performing electrical or electronic design, and electrical and electronic construction and maintenance inspections, specification preparation and estimating for highway systems, such as traffic management, signal and lighting and transportation-related facilities (such as moveable bridges, drainage pumping plants, vehicular tunnels, safety roadside rest areas, maintenance stations, truck weigh and inspection stations, and toll plazas), and associated electrical and electronic systems (such as cathodic and stray current protection, power and power distribution, indoor and outdoor lighting, aids to navigation, and other traffic management and facilities-related electrical and electronic systems) using state-of-the-art technology, i.e., Computer-Aided Drafting/Design (CADD) and personal computers. Some positions may require incumbents to work at considerable heights above the ground.

The Transportation Engineer's (Electrical) assignment within the Department of Transportation will be in one of three major program areas:

**TRAFFIC OPERATIONS:** Incumbents review traffic and project reports; prepare plans, specifications and estimates of traffic control and highway lighting systems; prepare studies of the physical characteristics of traffic intersections, including channelization, obstructions and potential conflict areas; analyze traffic flow and accident data; prepare timing for new traffic control systems; adjust timing and review the operation of existing traffic control systems; develop strategies and software for traffic control equipment using mini-computers and microprocessors; investigate problems in transportation electrical systems and recommend solutions; inspect and review electrical installations during and after construction; assist in the evaluation and development of new electrical and electronic traffic control and lighting equipment; review and consolidate field reports; prepare contract documents; and assist district offices in the preparation of plans, specifications, and estimates; and prepare correspondence and reports.

**STRUCTURES:** Incumbents review plans and prepare plans, specifications and cost estimates of electrical systems; prepare material lists for electrical layouts and requisitions for the purchase of electrical materials and components; inspect construction, maintenance, and repairs; check electrical shop plans and details and contractors' lists of equipment and construction details; test completed work for compliance with contract specifications; as required, may act as a lead worker and review the reports of other Transportation Engineers' (Electrical); and prepare correspondence and reports.

**NEW TECHNOLOGY:** Incumbents prepare research proposals; investigate applications of new technology; conduct research; perform statistical analysis on research data and make recommendations on implementation and monitor research projects; make engineering studies of current methods of materials testing (including operational requirements and procedures, service demands, equipment needs, and cost analysis); perform the design and development of automated data acquisition systems; perform field tests and collect data; perform design, development, and testing of new electronic equipment; may act in a lead capacity for specification compliance testing, research, or instrumentation; analyze and evaluate test data and correlate individual test results; make presentations; and prepare correspondence and reports.

## **EXAMINATION INFORMATION**

Training and Experience Questionnaire - 100%

All candidates will be required to complete a Training and Experience Questionnaire. The Questionnaire is designed to elicit specific information regarding each candidate's training and experience relevant to the Transportation Engineer (Electrical) classification. The information on the Training and Experience

Questionnaire will be competitively assessed based on pre-determined rating criteria.

The Training and Experience Questionnaire measures the following areas determined to be important for success on the job.

Computer Skills  
Written Skills  
Engineering Skills  
Technical Skills  
Interpersonal Skills  
Speaking Skills

In addition, there are questions regarding work experience in jobs similar to Transportation Engineer (Electrical), personal characteristics, and work performance.

## KNOWLEDGE AND ABILITIES

**Knowledge of:** Computer theory and operation, including state-of-the-art technology, e.g., CADD, personal computers, stand-alone interactive systems and various technical aids; mathematics related to electrical engineering; theory principles, standard practices, techniques and methods used in electrical, electronic and computer engineering; modern electrical apparatus, communications, instrumentation; direct and alternating current circuits; methods, materials, tools and equipment used in electrical, electronic or computer work; various codes; basic occupational safety and health regulations governing the design and installation of electrical and electronic equipment, including the National Electric Code and Title 8 Industrial Relations, Electrical Safety Orders of the Division of Occupational Safety and Health.

**Ability to:** Do electrical or electronic design work; make neat and accurate drawings and technical sketches; use state-of-the-art technology, i.e., CADD, personal computers, stand-alone interactive systems and various technical aids; make electrical calculations; inspect electrical installations; specify necessary equipment and materials; accurately interpret drawings, circuit diagrams and specifications; read and understand highway plans, drawings and field data which relate to transportation and traffic management-related electrical and electronic systems and installations; establish and maintain friendly and cooperative relations with those contacted during the course of inspections and other work; analyze situations accurately and take effective action; communicate effectively; originate correspondence and prepare effective reports.

## VETERANS' PREFERENCE POINTS

Veterans' Preference Points will be added to the final score of all competitors who are successful in this examination, and who qualify for, and have requested, these points through the State Personnel Board. Due to changes in the law, effective January 1, 1996, veterans who have achieved permanent civil service status are not eligible to receive Veterans' Preference Points.

## CAREER CREDITS

Career Credits will not be added to the final score of this examination, because it does not meet the requirements to qualify for Career Credits.

## CONTACT INFORMATION

If you have any questions concerning this announcement, please contact an SPB Representative at the State Personnel Board,

Examination Services Unit  
801 Capitol Mall, Sacramento, CA 95814  
(866) 844-8671, TDD (916) 654-6336.

California Relay Service: 1-800-735-2929 (TTY), 1-800-735-2922.

TTY is a Telecommunications Device for the Deaf and is reachable only from phones equipped with a TTY Device.

## GENERAL INFORMATION

**Applications are available** at [www.jobs.ca.gov](http://www.jobs.ca.gov), State Personnel Board offices, and local offices of the Employment Development Department.

**If you meet the requirements** stated on this examination bulletin, you may take this examination, which is competitive. Possession of the entrance requirements does not assure a place on the eligible list. Your performance in the examination described on this bulletin will be rated against a predetermined job-related rating, and all candidates who pass will be ranked according to their scores.

**The State Personnel Board** reserves the right to revise the examination plan to better meet the needs of the service, should the circumstances under which this examination was planned change. Such revision will be in accordance with civil service laws and rules, and all competitors will be notified.

**Candidates needing special testing arrangements** due to a disability must mark the appropriate box on the application and contact the testing department.

**Hiring Interview Scope:** In a hiring interview, in addition to the scope described in this bulletin, the panel will consider education, experience, personal development, personal traits, and fitness. In appraising experience, more weight may be given to the breadth and recency of pertinent experience, and evidence of the candidate's ability to accept and fulfill increasing responsibilities than to the length of his/her experience. Evaluation of a candidate's personal development will include consideration of his/her recognition of his/her own training needs; his/her plans for self-development; and the progress he/she has made in his/her efforts toward self-development. For more information, you may refer to the classification specification.

**General Qualifications:** Candidates must possess essential personal qualifications including integrity, initiative, dependability, good judgment, the ability to work cooperatively with others, and a state of health consistent with the ability to perform the assigned duties of the class. A medical examination may be required. In open examinations, investigation may be made of employment records and personal history, and fingerprinting may be required.

**Eligible Lists:** Eligible lists established by competitive examination, regardless of date, must be used in the following order: 1) sub-divisional promotional, 2) departmental promotional, 3) multi-departmental promotional, 4) service-wide promotional, 5) departmental open, and 6) open. When there are two lists of the same kind, the older must be used first. Eligible lists will expire in one to four years unless otherwise stated on the bulletin.

**Veterans' Preference Points:** California Law (Government Code 18971-18978) allows the granting of Veterans' Preference Points in open entrance and open, non-promotional entrance examinations. Veterans' Preference Points will be added to the final score of all competitors who are successful in these types of examinations, and who qualify for, and have requested by mail, these points. **In open (only)** entrance examinations, Veterans' Preference Points are granted as follows: 10 points for veterans, widows and widowers of veterans, and spouses of 100% disabled veterans (5 points for widows, widowers, and spouses if

the veteran was in the National Guard); and 15 points for disabled veterans. **In open, non-promotional** entrance examinations, Veterans' Preference Points are granted as follows: 10 points for veterans, and 15 points for disabled veterans. Employees who have achieved permanent State civil service status are not eligible to receive Veterans' Preference Points. "Permanent State civil service status" means the status of an employee who is lawfully retained in his/her position after completion of the applicable probationary period. This includes permanent intermittent, part-time, and full-time appointments. In addition, individuals who at any time achieved permanent State civil service status and subsequently resigned, or were dismissed from State civil service are not eligible to receive Veterans' Preference Points. Veteran status is verified by the State Personnel Board (SPB). Directions to apply for Veterans' Preference Points are on the Veterans' Preference Application (Std. Form 1093), which is available at [www.spb.ca.gov](http://www.spb.ca.gov) or from the State Personnel Board, 801 Capitol Mall, Sacramento, CA 95814, and the Department of Veterans Affairs.

## **TAKING THE EXAM**

**When you click the link below, you will be directed to the Training and Experience Questionnaire. At the end of the Training and Experience Questionnaire, it will be instantly scored.**

**[Click here to go to the Training and Experience Questionnaire for Transportation Engineer \(Electrical\).](#)**